

Appendix H
OB/OD Facility Map and Photos

APPENDIX H – EOD OB/OD FACILITY MAP AND PHOTOS

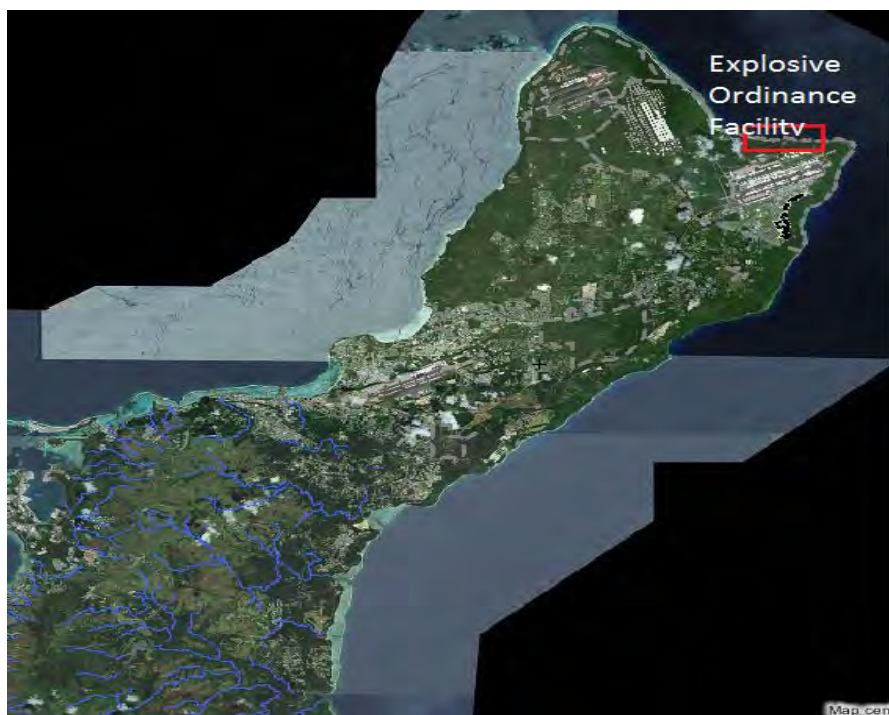


FIGURE 2-1: EOD LOCATION MAP



FIGURE 2-2: OB/OD AERIAL

EOD HAZARDOUS WASTE MANAGEMENT FACILITY TOPOGRAPHIC MAP

RCHA PART B PERMIT ANDERSEN AIR FORCE BASE, GUAM

LEGEND

- 1. EOD HAZARDOUS WASTE MANAGEMENT FACILITY
- 2. PACIFIC OCEAN
- 3. ANDERSEN AIR FORCE BASE
- 4. EOD HAZARDOUS WASTE MANAGEMENT FACILITY
- 5. PACIFIC OCEAN
- 6. ANDERSEN AIR FORCE BASE
- 7. EOD HAZARDOUS WASTE MANAGEMENT FACILITY
- 8. PACIFIC OCEAN
- 9. ANDERSEN AIR FORCE BASE

SCALE

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

NOTES

1. EOD HAZARDOUS WASTE MANAGEMENT FACILITY
2. PACIFIC OCEAN
3. ANDERSEN AIR FORCE BASE
4. EOD HAZARDOUS WASTE MANAGEMENT FACILITY
5. PACIFIC OCEAN
6. ANDERSEN AIR FORCE BASE
7. EOD HAZARDOUS WASTE MANAGEMENT FACILITY
8. PACIFIC OCEAN
9. ANDERSEN AIR FORCE BASE

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Photo 1. View of Tarague Beach (looking west) EOD Range in Foreground



Photo 2. OB proposed area (looking west)

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Photo 3. West End of EOD Range (looking south) Cement/personnel bunker to left and holding points on center



Photo 4. Cement/personnel bunker (looking east)

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Photo 5. Distance of OB area from sand (looking south)

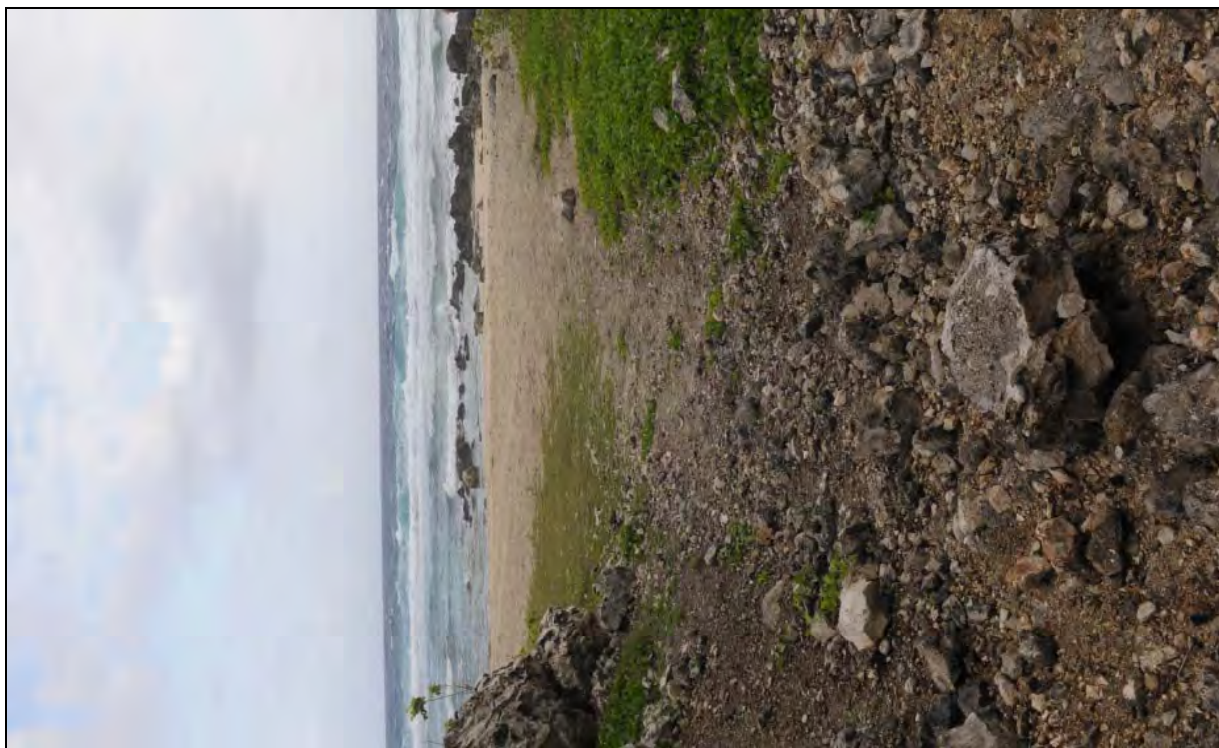


Photo 6. Distance of OD unit from shore (looking north)

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Photo 7. OD unit cliff line (looking south)



Photo 8. OD unit close-up (2-3 feet deep)

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Photo 9. View of Tagua Point (nearly inaccessible) at east end of EOD (looking east)



Photo 10. View from east end of EOD (looking west)

Appendix I

Process Information

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A. Process Information

Applicability As a “Miscellaneous Unit” (Parts VI.A. and X.A. [Adopts by reference 40 CFR 264.600 and 270.23] of the GHWMRs)

Activities performed at the OB/OD units at AAFB consist of treatment in “miscellaneous units” as defined in 40CFR260.10 in the RCRA regulations. Specifically, the units do not meet the definition of containers, tanks, surface impoundments, piles, land treatment units, landfills, incinerators, boilers, industrial furnaces, underground injection wells, or units eligible for research, development, and demonstration permits. Additionally, the preamble to the Subpart X regulations specifically states that the miscellaneous unit regulations are applicable to OB/OD activities for propellants, explosives, and pyrotechnics (PEP).

A1. Open Burning (OB) in Containment Devices (Part X.A. [Adopts by reference 40 CFR 270.23 and 270.32] of the GHWMRs)

Appropriateness of Treatment Methods (Part X.A. [Adopts by reference 40 CFR 270.32(b)] of the GHWMRs)

Waste energetic materials have been historically treated by OB, since this technology has been determined to be the most appropriate from a health and safety standpoint. Many types of military ordnances are designed so that they cannot be easily and safely disassembled, and for these types of ordnances, the OB technology may be the only method of treatment that provides an adequate margin of worker safety. In addition, OB is also inexpensive, and technically simple and relatively easy to conduct.

The effectiveness of other forms of treatment of waste energetic material is for the most part, unknown. Effectiveness in this context refers to the following:

- The ability to eliminate the reactive or explosive hazard posed by the materials, or to reduce such hazards so that the materials are no longer defined to be reactive or explosive.
- The ability to reduce hazardous and/or toxic materials to innocuous materials, as compared to the original material treated.

The Department of Defense has performed and continues to perform significant research and development activities to identify and evaluate alternative treatment technologies to OB/OD. While some alternatives have progressed beyond the conceptual or laboratory scale, most are still years away from being a viable alternative to OB/OD technologies. Additionally, although some technologies may show promise on a laboratory or pilot scale, they are only applicable to a small subset of the total universe of wastes, which may require treatment at AAFB. Therefore, implementation of alternative technologies that may be applicable at some future date may not permit total elimination of OB/OD activities at AAFB.

The current OB/OD treatment technologies are also very safe for waste handlers. In the process of refining OB/OD procedures throughout DOD, numerous SOPs have been developed which

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specifically ensure the safety of waste handlers. In fact, one of the key limitations to implementing alternative technologies is that the quality of worker safety provisions is not verified.

Containment Device Description (Part X.A. [Adopts by reference 40 CFR 270.23(a)] of the GHWMRs)

Physical characteristics, construction materials, and dimensions of the unit (Part X.A. [Adopts by reference 40 CFR 270.23(a)(1)] of the GHWMRs)

All OB operations treating reactive hazardous wastes occur in a metallic containment device. The containment device used for these activities is selected to meet the following objectives:

- Prevent incorporation of soil into the wastes and materials being burned;
- Contain fuels used in OB operations to prevent releases to the environment;
- Minimize the ejection of materials or wastes from the device onto the ground;
- Retain a large quantity of the heat generated during the burn; and
- Retain the minor detonations, which might occur when munitions are burned.

A large array of containment devices could meet these objectives and therefore could be employed for OB operations. As of March 1993 the containment device in use at AAFB is a former aboveground fuel storage tank, which has been cut in half and placed on end. The device takes the form of a cylinder with a flat bottom and no top. The approximate dimensions of the containment device in use in March 1993 are 4 ft in diameter and 5 ft tall. The device is made of one-quarter inch steel. A section of chain-link fence is placed over the top of the containment device to minimize the ejection of materials or wastes during the burn.

The integrity of the existing containment device is expected to deteriorate with time, necessitating renovation or replacement of the device. Replacement devices may not necessarily consist of former aboveground tanks. Although specific designs or dimensions of future containment devices cannot be identified at this time all devices will meet the containment objectives provided above. Additionally, the dimensions of the existing devices will be typical of future devices.

Engineering drawings of the fabricated device Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

As the rudimentary containment device in use in March 1993 has not been designed and fabricated specifically for use at the OB area, no engineering drawings of this former tank exist. Similarly, future containment devices used to replace the existing structure are not expected to be designed specifically for OB application. Therefore, it is not anticipated that engineering drawings of these devices will be available or necessary for proper identification and description of the unit. A general site plan of the area showing the OB unit is located in Appendix H.

Similarly, engineering plans and reports are not applicable to operation, maintenance, monitoring, and inspection activities. Engineering plans and reports for closure are addressed in the closure plan contained in Appendix G.

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Lining material within device (Part X.A. [Adopts by reference 40 CFR 270.23(a)(1) and (2)] of the GHWMRs)

No lining materials are present in the containment device in use as of March 1993. Future containment devices are similarly not expected to include a lining material.

Lining material below device Part X.A. [Adopts by reference 40 CFR 270.23(a)(1) and (2)] of the GHWMRs)

No lining materials below the containment device are used. Placement of lining materials beneath the device is not feasible given the potential destructive nature of the surf during storm events, as well as high temperature.

Leak Detection Provisions (Part X.A. [Adopts by reference 40 CFR 270.23(a) (2)] of the GHWMRs)

Following residue collection at the end of each burn event, the containment device is turned upside down to prevent accumulation of precipitation within the device. At that time, the device is inspected to ensure there are no holes, cracks, or other weaknesses in the structure of the device, and thus detect any leaks that may have occurred. This same inspection procedure is performed before the device is turned right side up prior to subsequent OB events. These activities prevent any wastes or materials placed within the device from leaking and therefore prevent releases to the environment.

Precipitation Cover (Part X.A. [Adopts by reference 40 CFR 270.23(a)(1) and (2)] of the GHWMRs)

Following residue collection at the end of each burn event, the containment device is turned upside down to prevent accumulation of precipitation within the device. This negates the need for a formal precipitation cover above the containment device.

Control of Releases of Ashes and Residues During OB (Integrity of Containment Devices) (Part X.A. [Adopts by reference 40 CFR 270.23(a) (2)] of the GHWMRs)

Several procedures or facets of the containment device design have been implemented to control the release of ash and other residues during OB activities. Some of the wastes treated in the containment device may have a tendency to be ejected from the device during certain circumstances. The AAFB device is covered with a section of chain link fence to minimize the quantity of items, which are ejected from the device during the burn.

The second action taken to minimize the ejection of partially burned wastes consists of proper placement of materials and wastes to be burned within the containment device. All materials and wastes are placed at least 2 feet below the top of the containment device to minimize the possibility that wastes could be ejected from the device.

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Because these measures will minimize but not completely prevent the ejection of wastes from the containment device, the Andersen AFB OB/OD Residue Management Plan, contained in the appendices, includes procedures to identify, collect and properly manage any wastes, which may have been ejected.

These procedures are implemented after the OB device is safe to approach, and never later than the day following the OB event. The following is an excerpt from the Residue Management Plan:

- 1.2.3 The vicinity of the containment device is inspected for any items, which may have been ejected from the device. Items still containing energetic materials are placed back into the containment device for burning that day. Metallic items not containing energetic materials are placed in the OB metal fragments container.

Ash and other residues are removed from the containment device the day after the burn is initiated. This action further minimizes the potential for release of ash after the burn is completed.

A final procedure to prevent release of residues from the OB containment device is to regularly monitor the integrity of the device and repair it if there is a concern over its integrity. Following residue collection at the end of each burn event, the containment device is turned upside down to prevent accumulation of precipitation within the device. At that time, the device is inspected to ensure there no holes, cracks, or other weaknesses in the structure of the device. This same inspection procedure is performed before the device is turned right side up prior to subsequent OB events. These activities prevent any wastes or materials placed within the device from leaking from the device and therefore prevent releases of ash or other residues to the environment.

To retain ejected materials in close proximity of the containment device, the device has been placed in a shallow depression in the beach. In this configuration, the vast majority of wastes ejected from the containment device are retained within the depression, facilitating location and collection of the ejected wastes following completion of the burns.

Methods to Control Deterioration of Fabricated Devices (Part X.A. [Adopts by reference 40 CFR 270.23(a) (2)] of the GHWMRs)

Deterioration of the containment device is not controlled; however, the device is routinely inspected for deterioration and maintained if deterioration is evident. Following residue collection at the end of each burn event, the containment device is turned upside down to prevent accumulation of precipitation within the device.

At that time, the device is inspected to ensure there are no holes, cracks, or other weaknesses in the structure of the device. This same inspection procedure is performed before the device is turned right side up prior to subsequent OB events. If a weak spot or hole is observed, either a piece of steel is welded over the problem area, or a replacement containment device is obtained.

Prevention of Accumulation of Precipitation (Part X.A. [Adopt by reference 40 CFR 270.23(a) (2)] of the GHWMRs)

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Although attempts are made not to schedule burn activities during and immediately after rainfall events, measurable precipitation may occur in the vicinity of the EOD Range any day of the year, especially during the rainy season. Additionally, it is impossible to predict with complete certainty if measurable precipitation will occur after the burn but before the containment device can be approached. Therefore, measures are taken to minimize the accumulation of precipitation in the OB containment device but complete prevention of accumulation of precipitation is nearly impossible.

The following measures are implemented to minimize accumulation of precipitation. After the containment device can be safely approached following completion of the burn (not later than the day after the burn was initiated), EOD personnel inspect and collect the residues contained within the device. If precipitation has collected within the device, a second burn will be initiated to evaporate the liquid in the device. Following residue collection at the end of each burn event, the containment device is turned upside down to prevent accumulation of precipitation within the device between burn events.

Handling of Precipitation Accumulated in Fabricated Devices (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

After the containment device can be safely approached following completion of the burn (not later than the day after the burn was initiated), EOD personnel inspect and collect the residues contained within the device. If precipitation has collected within the device, a second burn will be initiated to evaporate the liquid in the device.

Controls to Prevent Wind Dispersion of Ash and Other Residue (Part X.A. [Adopts by reference 40 CFR 270.23(a)(J) and (2)] of the GHWMRs)

The design of the containment device, use of a fence to cover the device, placement of the containment device within a shallow depression, and procedures for placement of wastes and materials within the device are such that the ejection of residues from the device during the burn is minimized. Additionally, following completion of the burn, ash and other residue is routinely only several inches deep, therefore well below the top of the containment device. Wind dispersion is minimized in this way. Additionally, ash is removed from the device soon after the burn is completed and never later than the day after the burn, further minimizing the opportunity for ash to be dispersed by the wind.

Inspection, Monitoring, and Maintenance Plan (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

As there are no facets of the containment system specifically engineered for OB operations, and no movable parts, inspection, monitoring and maintenance can be very effective yet quite simplified. Following residue collection at the end of each burn event, the containment device is turned upside down to prevent accumulation of precipitation within the device. At the time, the device is inspected and monitored to ensure there are no holes, cracks, or other weaknesses in the structure of the device. This same inspection procedure is performed before the device is turned right side up prior to subsequent OB events. If a weak spot or hole is observed, either a piece of steel is welded over the problem area, or a replacement containment device is obtained. Welding will only occur

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when no energetic materials are present at the EOD Range. More general inspection procedures for the EOD Range are described in Appendix C.

The OB containment device is not approached for at least 12 hours after a burn is conducted to ensure the burn is completed and the residue has cooled. Not later than one calendar day after the burn occurs, residue management and inspection procedures are put into place. As stated in the Andersen AFB OB/OD Residue Management Plan contained in the appendices:

- 1.2.1 Residues within the containment device are inspected to ensure all items have been successfully burned. Items remaining in the containment device still containing energetic materials are burned the day they are discovered.
- 1.2.3 The vicinity of the containment device is inspected for any items which may have been ejected from the device. Items still containing energetic materials are placed back into the containment device for burning that day. Metallic items not containing energetic materials are placed in the OB metal fragments container.

Ash and Residue Management (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

The Andersen AFB OB/OD Residue Management Plan, contained in the EOD operating procedures Appendix has been specifically prepared to address management of ash and other residues resulting from OB/OD operations. The following OB residue management procedures, described in the Management Plan, are implemented as soon as the containment device can be approached, and not later than the calendar day after the burn occurs:

- Ash Contained in the Containment Device – separated from metallic fragments, collected, analyzed for explosive and TCLP metal content, containerized, and disposed of properly based on the results of the analytical testing;
- Metallic Fragments Not Containing Energetic Materials. Located in the Containment Device – separated from the ash, collected, and accumulated for recycling at a permitted facility;
- Metallic Fragments Containing Energetic Materials. Located in the Containment Device – burned in the containment device the day they are located;
- Metallic Fragments Containing Energetic Materials. Ejected from the Containment Device – collected, and burned in the containment device the day they are located; and
- Metallic Fragments Not Containing Energetic Materials. Ejected from the Containment Device – collected, accumulated for shipment to the Defense Reutilization & Marketing Office to facilitate recycling at a permitted facility.

Copy of Standard Operating Procedures (SOPs) (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

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A significant number of U.S. Air Force and Andersen AFB SOPs have been developed to effectively perform both OB and OD operations. A brief summary of the principal SOPs follows:

1. 36 Wing Instruction 32-3001
Dated: 1 May 2008

This document is an eighteen -page outline for all operational procedures conducted on the range. This document in turn references four other documents, which are Air Force-wide documents:

AFMAN 91-201 (12 January 2011): See separate discussion section on AFMAN 91-201, Explosives Safety Standards

TO 11A-1-42 (6 October 2000): See separate discussion section on TO 11A-1-42, General Instructions for Disposal of Conventional Munitions.

TO 11A-1-66 (1 August 2003): General Instructions. Demolitions

TO 60A-1-1-31 (24 April 2009): Explosive Ordnance Disposal Procedures. EOD Disposal Procedures

This Wing Instruction also includes seven attachments:

1. Range Notification Lists
 - a. Non-Fragmenting Operations/5 Inch Diameter or Less
 - b. Fragmenting Munitions Greater than 5 Inch Diameter
2. Range Operation Checklist
3. Post Range Operations Checklist
4. Safety Briefing
5. Proper Detonation Point/Cliff Orientation and Quarterly Clean-up Area
6. Security Forces Cordon Locations

Attachment 3 outlines the procedures followed during treatment of RCRA waste munitions. This attachment is included in the EOD Operating Procedures Appendix in its entirety.

2. Technical Order 11A-1-42. General Instructions for Disposal of Conventional Munitions
Dated: 15 July 1997
Revised: Change 6 – 30 October 2000

This is a very comprehensive USAF-wide document, which details procedures for disposal/demolition of a wide variety of munitions. Chapter headings of significance for this application are:

- Safety and Accident Prevention
- Description of Demolition Materials
- Methods of Disposal
- Firing Systems Procedures

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- Treatment of Chemical Agent Casualties
 - Munition Disposal Procedures
 - Missile Explosive Components
 - Rocket Motors and Warheads
 - Aircraft Egress Items
3. Technical Order 11-A-1-46 (1 December 2003), Fire Fighting Guidance, Transportation, and Storage Management Data and Ammunition Complete Round Chart

This document presents data in lists of tables regarding munitions. The information presented in this document consists of item stock number, cross-reference numbers, net explosive weight, and munitions descriptions.

4. AFMAN 91-201, Explosive Safety Standards
Dated: 12 January 2011

This document is USAF-wide and contains mechanical details of explosive safety. This document is for general handling of explosives, not necessarily specifically oriented to EOD operations.

5. Technical Order 60A-1-1-31, Explosive Ordnance Disposal Procedures, EOD Disposal Procedures
Dated: 24 April 2009
Revised: Revision 6

This manual describes the type and nature of the materials and equipment used to conduct EOD disposal procedures. This document covers general instruction for explosive ordnance disposal. This document is not releasable. Most of the operational material is covered in TO 11A-1-42. Other areas covered in this document include operations that are not included in this TSD application, including emergency operations, training, etc.

6. 36 AW Operations Plan 32-1, Disaster Preparedness Peacetime Operations
Dated: May 2002
Reference: OPR: 36 CES/CEV

This plan specifies procedures for preparing for and recovering from the effects of major peacetime accidents and natural disasters. This plan also specifies procedures for rendering assistance to civil authorities after natural disasters. It provides Andersen AFB specific outlines for responses to major accidents (military mishaps), and natural disasters.

A2. OB on the Ground Surface Where Unit Incorporates the Soil as Part of the Unit (Part X.A. [Adopts by reference 40 CFR 270.23 and 270.32] of the GHWMRs)

This section does not apply, since all OB activities at AAFB occur within a containment device, which prevents the incorporation of soil as part of the unit. These activities are addressed in A1.

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A3. Open Detonation (OD) (Part X.A. [Adopts by reference 40 CFR 270.23 and 270.32] of the GHWMRs)

Appropriateness of Treatment Technology (Part X.A. [Adopts by reference 40 CFR 270.32(b)] of the GHWMRs)

The first portion of A1 provided a rationale as to why the OB technology is the most appropriate treatment technology for energetic reactive hazardous wastes. This discussion is also applicable to OD activities. Given the large net explosive weight contained in many of the ordnance items routinely detonated at the AAFB OD unit, the potential for use of alternative technologies is even more limited than in OB.

Description of OD Unit (Part X.A. [Adopts by reference 40 CFR 270.23(a)] of the GHWMRs)

Physical characteristics, materials of construction, and dimensions of the unit (Part X.A. [Adopts by reference 40 CFR 270.23(a)(1)] of the GHWMRs)

All OD operations occur directly on the ground (beach) surface; therefore, there are no physical characteristics or materials of construction to discuss. Detonation activities occur adjacent to the base of the lower cliff, and are limited to a small portion of the cliff base less than 50 feet in length.

Engineering plan and drawings of the OD unit (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

Engineering plans or drawings of the OD unit are not applicable, since there is no man-made device or structure at the unit. A general site plan of the area showing the OD unit is contained in Figure 11-8.

Inspection, Monitoring, and Maintenance Plan (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

As there are no “engineered” facets of the OD system, and no moving parts, inspection and monitoring can be very effective yet quite simplified. Soon after the OD unit can be safely approached following completion of a detonation (generally within 1 hour of the detonation), the OD unit is inspected for any items which may remain after detonation, as stated in the Andersen AFB OB/OD Residue Management Plan contained in the EOD Operating Procedures Appendix:

- 2.2 The OD area will be inspected for any items which may remain after detonation. Items still containing energetic materials are either placed into the OB containment device for burning that day, or detonated that day. Metallic items not containing energetic materials are placed in a container labeled “OD Metal Fragments.”

More general inspection procedures for the EOD Range are described in Appendix C.

Ash and Residue Management (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

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The Andersen AFB OB/OD Residue Management Plan, contained in Appendix J, has been specifically prepared to address management of ash and other residues resulting from OB/OD operations. The following OD residue management procedures, described in the Management Plan, are implemented as soon as the OD unit can be approached, generally within 1 hour of completion of the detonation:

- Metallic Fragments Containing Energetic Materials – collected, and either burned in the OB containment device or detonated the day they are collected; and
- Metallic Fragments Not Containing Energetic Materials – collected, and accumulated recycling or disposal at a Guam EPA permitted facility.

Negligible quantities of ash are generated from OD operations. Therefore, the residue management procedures described above strictly address any metallic residues (principally metal fragments), which may remain after the detonation.

Run-on and Run-off Management (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

The OD unit is located in the upper beach area on highly permeable materials. As such, even in major precipitation events, run-on and run-off are negligible at this site. Management of run-on and run-off at the OD unit is therefore not necessary.

Copy of SOPs (Part X.A. [Adopts by reference 40 CFR 270.23(a)(2)] of the GHWMRs)

The last portion of A1, Copy of Standard Operating Procedures (SOPs), contains a summary of several SOPs, which address operations both at OD and OB activities. It also references specific SOPs contained in the Appendix.

B. Environmental Performance Standards

Environmental performance standards for OB/OD RCRA hazardous waste treatment activities at the Andersen AFB EOD Range are provided in the following list of 21 items. References to those sections of this application which provide technical justification for the development of these performance standards are provided in parentheses.

Environmental Performance Standards

General

1. OB/OD activities will only occur during daylight hours.
2. OB/OD activities will only occur when wind speeds are less than or equal to 15 miles per hour.

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3. OB/OD activities will not be performed if electrical storms are within 5 nautical miles of the EOD Range.
4. OB/OD activities will not be performed if major storms capable of flooding the EOD Range are forecasted to occur within 24 hours.
5. Residue from OB or OD activities which contains energetic materials will be burned or detonated the day they are located.
6. The beach area in the vicinity of the EOD Range will be policed, and all metal items collected, at least quarterly in addition to the policing conducted following each OB or OD operation.
7. Usage of the EOD Range will be restricted, as follows:

12 hours per day

50 days/year

1 Open Burn operation per day

4 Open Detonation operations per day of any listed ordnance

Up to 23 additional Open Detonation operations per day of bombs containing tritonal (No. 10 and/or No. 42, see list at end of Environmental Performance Standards)

Burn and detonation events may occur on the same day.

8. At least once per quarter, the reef will be inspected for fragments and unexploded ordnance (UXO), with all identified items recovered from the water. The area inspected will be from the beach to the reef line, and 100 ft east and west of the OD area.

Open Burning/Open Detonation RCRA hazardous waste treatment waste materials restrictions

9. Any ordnance or other energetic material listed in Table III-7 of Appendix A may be burned or detonated, subject to limitations contained in Environmental Performance Standards number 19 and 21.
10. Any ordnance or other energetic material not listed in Table III-7 of Appendix A may be burned or detonated, if they do not contain metals or sulfur-bearing compounds, subject to limitations contained in Environmental Performance Standard numbers 19 and 21.
11. Waste ordnance or other energetic material not listed in Table III-7 of Appendix A which contains metals or sulfur-bearing compounds, may be burned or detonated, subject to the maximum acceptable quantities specified by the tables listed in Tables III-1 or III-2.

Open Burning RCRA hazardous waste treatment operating restrictions

12. OB activities will occur in a suitable containment device.

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13. The OB containment device will incorporate a coarse screen over the top of the device in order to minimize ejection of materials during OB treatment. Also, waste ordnance will be placed a minimum of 2 feet below the top of the device, and the containment device will be placed in a shallow depression in the sand.
14. The OB containment device will be inspected before and after each burn to ensure structural integrity.
15. The OB containment device will be turned upside down after each burn to prevent accumulation of precipitation.
16. Residues remaining in the OB containment device will be collected no later than the day after the burn, but before the device is turned upside down.
17. If precipitation accumulates in the OB containment device before residue can be removed, then an additional burn will take place to evaporate all moisture from the residue.
18. Residues ejected from the OB containment device will be collected no later than the day after the burn.
19. The maximum NEW for each OB event is 100 lbs, except for the following items (as numbered in Table III-7 of Appendix A):

Restricted to 5 lbs (total): Nos. 10, 42, 43, 45, 50

Restricted to 10 lbs (total): Nos. 36, 37, 38, 39, 40, 51

Restricted to 50 lbs (total): No. 4

Open Detonation RCRA hazardous waste treatment operating restrictions

20. Residues remaining after detonation must be collected no later than 1 hour after the detonation is initiated.
21. The maximum NEW for each OD event is 600 lbs, except for the following items (as numbered in Table III-7 of Appendix A):

Total NEW (lbs) <u>For OD Event</u>	<u>No. 95</u>	Weight Restriction (lbs) <u>No. 14 or 15</u>
1	0.26	1.0
5	0.54	2.7
20	0.64	3.2
50	1.4	7.0
100	2.1	10
200	3.5	17
300	5.0	25
400	6.7	33

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500	8.3	42
600	100	50

Restricted Open Burn items:

- # 4 – 7.62 blank
- # 18 – fuse, time
- # 42 – detonator, percussion, M2A1
- # 43 – detonator, percussion, M2A2
- # 45 – detonator kit, M1
- # 36 – firing device, M1
- # 37 – firing device, demolition, M1A1
- # 38 – firing device, demolition, M5
- # 39 – firing device, demolition, M3
- # 40 – firing device, demolition, M1
- # 50 – primer, percussion, cap
- # 29 – cratering charge M180

Restricted Open Detonation items:

- # 14 – caps, electric blasting
- # 15 – caps, non-electric blasting
- # 95 – grenade, MK1, illuminating

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**TABLE III-1 MAXIMUM PERMISSIBLE QUANTITY OF METALS AND
SULFUR THAT CAN BE TREATED PER OB EVENT**

<u>Constituent</u>	<u>Quantity per Event (lbs)</u>
Aluminum Cpds, as Al	2.25E+01
Antimony Cpds, as Sb	2.50E+00
Barium Cpds, as Ba	5.11E-01
Calcium Cpds, as Ca	3.37E-01
Copper Cpds, as Cu	0.00E+00
Iron Cpds, as Fe	8.48E+01
Lead Cpds, as Pb	2.72E+00
Magnesium Cpds, as Mg	5.72E+01
Potassium Cpds, as K	4.59E+01
Silver Cpds, as Ag	1.02E+00
Sodium Cpds, as Na	3.51E+01
Strontium Cpds, as Sr	4.09E+00
Sulfur Cpds, as S	6.26E-01
Tin Cpds, as Sn	7.25E-02
Uranium Cpds, as U	1.11E+00
Zinc Cpds, as Zn	1.90E+01

This table presents maximum quantities of metals and sulfur compounds that can be treated during a single OB event. The table is used to comply with Environmental Performance Standard # 11, i.e., only when waste ordnance or other energetic materials not listed in Table III-7 of Appendix A are to be treated.

APPENDIX I - PROCESS INFORMATION

TABLE III-2 MAXIMUM PERMISSIBLE QUANTITY OF METALS AND SULFUR THAT CAN BE TREATED PER OD EVENT

Quantity per Event (lbs)								
Constituent	Total NEW 1 lb	Total NEW 5 lb	Total NEW 20 lb	Total NEW 50 lb	Total NEW 100 lb	Total NEW 200 lb	Total NEW 400 lb	Total NEW 600 lb
Aluminum Cpds, as Al	4.03E+00	8.36E+00	1.40E+00	2.16E+01	3.24E-01	5.40E+01	1.01E+02	1.52E+02
Antimony Cpds, as Sb	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium Cpds, as Ba	6.65E-02	1.38E-01	2.31E-01	3.57E-01	5.35E-01	8.92E-01	1.67E+00	2.51E+00
Calcium Cpds, as Ca	2.04E-01	4.23E-01	7.08E-01	1.10+00	1.64E+00	2.74E+00	5.13E+00	7.70E+00
Copper Cpds, as Cu	5.83E-03	1.21E-01	2.02E-02	3.13E-02	4.69E-02	7.82E-02	1.47E-01	2.20E-01
Iron Cpds, as Fe	8.32E+00	1.73E+01	2.86E+01	4.47E+01	6.70E+01	1.12E+02	2.09E+02	3.14E+02
Lead Cpds, as Pb	4.72E-01	9.79E-01	1.64E+00	2.53E+00	3.80E+00	6.33E+00	1.19E+01	1.78E+01
Magnesium Cpds, as Mg	8.74E+00	1.81E+01	3.03E+01	4.69E+01	7.04E+01	1.17E+02	2.20E+02	3.03E+02
Potassium Cpds, as K	3.60E-01	7.48E-01	1.25E+00	1.93E+00	2.90E+00	4.84E+00	9.07E+00	1.36E+01
Silver Cpds, as Ag	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sodium Cpds, as Na	5.59E+00	1.16E+01	1.94E+01	3.00E+01	4.50E+01	7.50E+01	1.41E+02	2.11E+02
Strontium Cpds, as Sr	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Sulfur Cpds, as S	1.59E-06	3.30E-06	5.52E-06	8.53E-06	1.28E-05	2.13E-08	4.00E-05	6.00E-05
Tin Cpds, as Sn	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Uranium Cpds, as U	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc Cpds, as Zn	3.02E+00	6.27E+00	1.05E+01	1.62E+01	2.43E+01	4.05E+01	7.60E+01	1.14E+02

This table presents maximum quantities of metals and sulfur compounds that can be treated during a single OB event. The table is used to comply with Environmental Performance Standard # 11, i.e., only when waste ordnance or other energetic materials not listed in Table III-7 of Appendix A are to be treated.

Appendix J

OB/OD Residue Management Plan

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1.0 PURPOSE

The purpose of this plan is to provide a procedure by which OB/OD residue is identified, collected, and directed for further treatment, proper hazardous waste storage, recycling, or land filling, as appropriate. For the purposes of this plan, residue generated during OB/OD activities includes:

1. Ash contained in the OB containment device (note that OD operations produce no identifiable ash).
2. Metallic fragments which include partially burned/detonated energetic materials contained within the OB or OD treatment units.
3. Items containing partially burned/detonated energetic materials ejected from the OB or OD treatment units.
4. Metallic fragments not containing partially burned/detonated energetic materials contained within the OB or OD treatment units.
5. Items not containing partially burned/detonated energetic materials ejected from the OB or OD treatment units.
6. Miscellaneous materials found at the EOD range.

These residue(s) may be generated from either RCRA hazardous waste treatment or non-RCRA (i.e. training or emergency disposal) operations. This Residue Management Plan is intended to address all residues on the EOD Range, regardless of origin.

In addition, this Residue Management Plan outlines procedures for maintaining general cleanliness of the EOD Range.

2.0 RELATED DOCUMENTS

2.1 36 Wing Instruction 32-3001

- 2.1.1 Attachment 1A: Range Notification List: Non-fragmenting/5” dia or less
- 2.1.2 Attachment 1B: Range Notification List: Fragmenting greater than 5”
- 2.1.2 Attachment 2: Range Operation Checklist
- 2.1.3 Attachment 3: Post Range Operations Checklist
- 2.1.4 Attachment 4: Safety Briefing
- 2.1.5 Attachment 5: Proper Detonation Point/Cliff Orientation
- 2.1.6 Attachment 6: SFS Cordon and Warning Sign Locations

2.2 Andersen AFB Hazardous Waste Management Plan

2.3 Andersen AFB Hazardous Waste Characterization Form

2.4 Explosive Ordnance Disposal Scrap Metal Clearance Log

2.5 Certificate of Clearance for Munitions Residue

2.6 DOD Form DD1348, for Scrap Turn-in

3.0 DEFINITIONS

AAFB: Andersen Air Force Base

Ash: All solid residue remaining following Open Burning operations.

Containment Device: Essentially a large drum with a wire fitting for holding OB materials for disposal. Into this container are placed the materials for treatment (within the pierced burn container), dunnage, and ignition material. A removable wire mesh cover is placed on the top of the drum during burn operations to further limit ejecta.

DOD: Department of Defense

DRMO: Defense Reutilization & Marketing Office

Dunnage: Wood, combustible material placed within the OB containment device to sustain the combustion during treatment process.

Ejecta: Any ordnance material, which is thrown from the treatment unit during the treatment process.

Energetic Material: Any explosive material, whether contained within an ordnance or separated from an ordnance.

EOD: Explosive Ordnance Disposal

EOD Flight: Military designation for the group of individuals assigned to conduct the EOD operations.

EOD Range: The area used by EOD personnel to perform treatment operation, as well as EOD mission training, and emergency operations. The EOD Range is surrounded by a safety exclusion zone to minimize risk to human life during operations.

Explosive (Explosive Ordnance): Any chemical compound, mixture, or device whose primary purpose is to function by detonation or deflagration with instantaneous release of heat and gas.

Hazardous Waste: A solid waste that exhibits any of the characteristics of hazardous waste. (ignitability, corrosivity, reactivity, and toxicity) or is a listed hazardous waste under RCRA (40 CFR 261.3)

IDW: Investigative derived waste, waste materials generated during completion of investigation activities.

Ignition Materials: Materials used to initiate the OB combustion process. These generally consist of a radio-controlled igniter with a small quantity (approximately 5 gallons) of virgin diesel fuel.

APPENDIX J – OB/OD RESIDUE MANAGEMENT PLAN

Metallic Fragment: A metallic material that remains following ordnance treatment. Metallic fragments can include items remaining in the OB or OD treatment units or ejecta thrown out during treatment.

Non-hazardous Waste: A solid waste that does not exhibit characteristics of hazardous waste.

Open Burning (OB): Combustion of PEP or explosive ordnance without the control of combustion air, containment of the combustion reaction in an enclosed device, or control of emission of gaseous and particulate combustion products.

Open Detonation (OD): Unconfined, violent reaction of PEP or explosive ordnance without the control of combustion air, containment of the combustion reaction in an enclosed device, or control of emission of gaseous and particulate combustion products.

PEP: Term used to refer collectively to propellants, explosives, and pyrotechnics.

Pierced Burn Container: A small metallic box, pierced with holes, in which the OB materials to be treated are placed. This Pierced Burn Container is then placed within the Containment Device for treatment by combustion.

PPE: Personal protective equipment, safety equipment worn by individuals to eliminate or mitigate potential exposure to harmful materials.

Range Policing: The periodic and routine visual inspection and removal of OB/OD residue from the EOD Range.

Reef Crest: Sharp break in slope at seaward margin or edge of reef flat

Reef Flat: The area located between the beach and the reef rock rim/reef crest.

Reef Rock Rim: The highest energy zone of a coral reef ecosystem with intense wave action and surges. Parts of it may be exposed at low tide.

Residue: Any material remaining from OB/OD activities (examples include: ash, incompletely treated ordnance, fragments). The term residue may also include materials from non-RCRA treatment OB/OD operations (i.e., training, or emergency operations), which may also take place on the EOD range.

TCLP: Toxic characteristic leaching procedure, a hazardous waste regulatory specified method for waste analysis, also includes list of specific compounds, which determine hazardous characteristic.

T.O.: DOD Technical Order documents.

4.0 RESIDUE MANAGEMENT – OB EVENTS

4.1 General

Residue management activities related to OB activities area are allowed to begin no sooner than 12 and not later than 24 hours after the burn is conducted. This delay (as required by USAF EOD procedures) provides time to ensure that the burn is complete and the residue has cooled to a temperature allowing safe handling in case there is incomplete treatment.

4.2 Follow-up Range Policing Activities

Range policing is performed to collect any material, which may have been ejected, from the treatment unit for retreatment or proper disposal. Policing involves a thorough visible inspection of the beach area from the water to the jungle. During range policing, the EOD Team performs an organized “sweep” of the range.

The inspection sweep follows a “Foreign Object Detection” approach, whereby team members line up, separated by a short distance, and walk forward, searching the area directly ahead of their forward progress. Large objects, which are not easily picked up and carried, and objects that may pose a potential hazard (i.e., are suspected to contain energetic material), are marked with a flag and removed following the range sweep. Any other object is removed during the sweep. The sweep is continued until the entire range area has been cleared.

Particular attention is given to the area within 200 feet of the burn containment device where shrapnel may have been ejected during the burn.

4.3 Residue Collection Procedures

4.3.1 Within the OB Treatment Unit

Residues within the OB pierced burn container as well as the OB containment device are visually inspected to ensure that energetic material has been destroyed. If visual inspection is inconclusive, a representative sample of the ash is removed and tested for presence of nitro explosives using Webster’s Reagent.

If untreated wastes or items still containing energetic materials are discovered, they are re-treated the same day. If the treatment operation is determined to have been complete, the burn ash residues are removed for proper handling in accordance with Section 4.5.

4.3.2 Ejecta

During the post burn policing, any items, which may have been ejected during the burn, are collected. Each collected item is inspected for energetic material.

APPENDIX J – OB/OD RESIDUE MANAGEMENT PLAN

Items still containing energetic material are re-treated the day they are discovered. Metal fragments not containing energetic material are handled in accordance with Section 4.4.

4.4 OB Metallic Fragments Handling Procedure

Metal fragments not containing energetic material will be picked up and be disposed of or recycled properly at a permitted facility.

4.5 OB Ash Handling Procedures

Handling of OB ash subsequent to the completion of the OB treatment event is accomplished in accordance with the Andersen AFB Hazardous Waste Management Plan (Sept. 2007). Specific procedures pertinent to this particular waste stream are reiterated in this Residue Management Plan as follows.

4.5.1 Waste Characterization

Based upon historical data, the ash generated by Open Burning treatment events is presumed to be hazardous waste based upon TCLP Lead criteria. Following confirmation of complete reaction (i.e., no explosive materials remaining), this OB ash is handled, transported, and disposed of as a TCLP Lead hazardous waste.

4.5.2 Environmental Flight Notification

Andersen AFB Environmental Flight (36 CES/CEV) is notified of the generation of OB ash by completion and submission of the Andersen AFB Material/Waste Characterization Form. (Note: Due to the scheduled nature of most, if not all, of the OB events, and the need for notification to initiate the event, Environmental Flight will already be cognizant of the waste generation.)

4.5.3 On-Base Transportation

Upon authorization by Environmental Flight (36 CES/CEV), AAFB EOD personnel transport this waste to the on-base less than 90 days hazardous waste accumulation site, Building 19017.

4.5.4 OB Ash Handling Procedures

OB ash consists of materials remaining within the small, pierced burn container and the OB containment device. Note that any metal fragments present in the ash are handled as ash (hazardous waste), and not recovered. Handling of this ash is accomplished as follows.

APPENDIX J – OB/OD RESIDUE MANAGEMENT PLAN

1. The ash within the pierced burn container is dry brush swept into a small, 15 gallon sealed, metal container.
2. The OB containment device is tipped on its side.
3. The ash residue is transferred to the same small 15 gallon sealed metal container as the pierced burn container ash. This may be accomplished by dry brushing and scooping with hand tools (i.e., dust pan, trowel).
4. This metal container is transported to Building 19017.
5. The ash in the container is transferred to the designated temporary storage drum by simple pouring, followed by light dry brushing.
6. The brush and any other small hand equipment used for transfer of ash material are returned to its original or replacement doubled plastic bag.

4.6 Waste Disposal Procedures

Two waste streams, one hazardous and one non-hazardous, are associated with the OB treatment process. These are disposed of as follows.

- 4.6.1 Hazardous waste includes burn ash generated by the OB treatment operation and small amounts of miscellaneous waste generated through handling of the ash. These materials are presumed hazardous due to TCLP Lead content.

Both the burn ash and the ash handling generated wastes such as PPE (limited to disposable gloves and respirator cartridges) and plastic bags from the equipment storage, are placed with other IDW or hazardous waste handling PPE wastes in Building 19017 for proper disposal.

- 4.6.2 Non-hazardous wastes are composed primarily of scrap metal fragments. This non-hazardous metallic fragment waste will be disposed of or recycled properly at a permitted facility.

4.7 Ash Handling Equipment Storage

When not in use, the equipment used in handling OB ash is secured at the EOD Flight, Building 2600. The handling equipment consists of small containers and hand tools including pierced burn container, 15 gallon steel ash drum, small brush, and metal dustpan or scoop. These items are stored in doubled sealed plastic bags and properly labeled to avoid usage in other applications.

4.8 Personnel Health and Safety

APPENDIX J – OB/OD RESIDUE MANAGEMENT PLAN

Health and safety issues are addressed in the AAFB basewide Health and Safety Plan. The only issues of consequence for ash handling are: (1) dermal contact, and (2) respirable dust. These are mitigated by use of disposable gloves, and half face respirators respectively.

4.9 Documentation

36 WI 32-3001 Attachment 2 checklist is completed which documents the operational aspects of handling the waste generated by EOD treatment operations within AAFB.

4.9.1 Hazardous Waste

For the burn ash, a known hazardous waste, the AAFB Waste Characterization form is completed and forwarded to Environmental Flight for review and acceptance of the waste at Building 19017.

4.9.2 Scrap Metal

EOD Flight completes a Certificate of Clearance for Munitions Residue to document the waste is no longer reactive and forwards to Environmental Flight.

The scrap metal will be properly recycled at a permitted facility.

5.0 RESIDUE MANAGEMENT – OD EVENTS

5.1 General

Residue management activities related to OD activities begin as soon as the area is declared safe. This generally occurs within one hour after completing treatment activities.

5.2 Follow-up Range Policing Activities

Range policing is performed to collect any material, which may have been ejected, from the treatment unit for retreatment or proper disposal. Policing involves a thorough visible inspection of the beach area from the ocean to the jungle. During range policing, the EOD Team performs an organized “sweep” of the range.

The inspection sweep follows a “Foreign Object Detection” approach, whereby team members line up, separated by a short distance, and walk forward, searching the area directly ahead of their forward progress. Large objects which are not easily picked up and carried, and objects that may pose a potential hazard (i.e., are suspected to contain energetic material), are marked with a flag and removed following the range sweep. Any other object is removed during the sweep. The sweep is continued until the entire range area has been cleared.

Particular attention is given to the area within 200 feet of the OD treatment unit where material may have been ejected by the detonation.

5.3 Residue Collection Procedures

5.3.1 Within OD Treatment Unit

Residues within the OD containment device, if found, are inspected to ensure that energetic material has been destroyed. Typically, the OD treatment is very complete. If untreated wastes or items still containing energetic materials are discovered, they are immediately retrieved for treatment the same day. Experience indicates that there is no identifiable ash which remains following a detonation event and that residue will be metal fragments (shrapnel).

Metal fragments without evidence of energetic material are removed from the treatment unit. These materials are then handled in accordance with the procedures in Section 5.4.

5.3.2 Ejecta

During the post detonation policing, any items, which may have been ejected beyond the OD treatment unit, are collected. Each collected item is inspected

for energetic material. Items still containing energetic material are retrieved for retreatment the day they are discovered. Metal fragments not containing energetic material are handled in accordance with Section 5.4. A visual survey of the nearby Pacific Ocean will be conducted from the beach area quarterly to identify and recover any UXO ejected into the ocean during OD activities. The area surveyed will be that area of the ‘reef flat’ that lies within the Quantity-Distance arc. This area is approximately 4,000 feet up the shoreline (west) from our detonation point and as far as safely and reasonably possible down the shoreline (east). The shore line area east of the detonation site is dangerous cliff lined area (no beach) with high crashing surf.

5.4 OD Metallic Fragments Handling Procedures

Metal fragments not containing energetic material will be policed up and be disposed of or recycled properly at a permitted facility.

5.5 OD Ash Handling Procedures

Any ash or secondary source of contamination due to OD airborne contaminants, which come to rest on the ground surface, will be characterized via chemical or visual methods, removed, and disposed of in accordance with all applicable rules and regulations.

5.6 Waste Disposal Procedures

All wastes generated by the OD treatment procedure are non-hazardous. These wastes are characterized as metallic fragments. These wastes are policed up and disposed of or recycled properly at a permitted facility.

6.0 ROUTINE EOD RANGE POLICING ACTIVITIES

6.1 General

While every effort is made to collect and properly dispose of OB/OD residues within 24 hours of any activity, remnants from past EOD operations, training exercises, and past wars are routinely found on the EOD range and adjacent beach area. In most cases, these items are either washed ashore from the ocean or brought to the surface from beneath the beach due to wave action, heavy rains, and or winds. The purpose of routine range policing activity is to minimize environmental exposure from any man-made materials located in the EOD range and adjacent areas.

In addition, the ocean wave and current actions also provide a continuing source of general trash, which washes onto the EOD Range. This material is routinely cleaned up during the general policing activities.

6.2 Routine Site Inspections

Routine range policing is performed regardless of whether any EOD operations have been conducted. Range policing is performed to collect any material that could be related to EOD operations, regardless of whether it was actually generated by EOD operations. Upon collection of such material, it is sorted for retreatment or proper disposal as outlined in Section 5.3. Policing involves a thorough visible inspection of the beach area from the ocean to the jungle. During range policing, the EOD Team performs an organized “sweep” of the range.

The inspection follows a “Foreign Object Detection” approach, whereby team members line up, separated by a short distance, and walk forward, searching the area directly ahead of their forward progress. Large objects which are not easily picked up and carried, and objects that may pose a potential hazard (i.e., are suspected to contain energetic material), are marked with a flag and removed immediately following the range sweep. Any other object is removed during the sweep. The sweep is continued until the entire range area has been cleared.

Particular attention is given to the areas within 200 feet of the OD treatment unit and the OB treatment unit where material may have been ejected by the detonation and/or burn.

Note that the areas adjacent to the EOD range area located on the beach but not easily accessible (i.e., jungle) are policed less frequently.

6.3 Frequency of Routine Range Policing Operations

6.3.1 Beach Area

The beach area will be policed quarterly and following each explosive operation. If after a previous policing operation a significant amount of waste or debris material is discovered on the beach, the routine range policing operation frequency will be increased until such time as the policing uncovers no waste material.

6.3.2 Jungle Areas

Due to difficulty in accessibility, the jungle areas will be policed annually. Policing of the jungle area will be performed concurrent with a routine policing of the beach area. If, after a routine policing operation a significant amount of waste material is discovered in the jungle areas routine policing of these areas will be performed until the collection of waste reaches a minimal level.

6.4 Identification of Waste

During range policing operations, any object that could be related to EOD operations (metallic fragment, shell, ordnance, etc.) shall be collected and handled as appropriate.

6.5 Disposition of Waste Collected

One or more of three types of wastes may be collected during general policing activities: wastes with energetic materials, metal fragments without energetic materials, or general trash.

Waste found with energetic materials is treated as specified in Section 4.3.2 (OB) or Section 5.4 (OD), (i.e., disposed of or recycled properly at a permitted facility.).

General trash, which is retrieved from the EOD Range, is transferred to any one of the general trash dumpsters located throughout the base for disposal.

7.0 NON-ROUTINE EOD RANGE POLICING ACTIVITIES

7.1 General

Natural phenomena may result in the exposure of EOD residue, items remaining from training operations, or remaining shrapnel from past wars on the EOD Range beach area, which are not found during routine policing activities. Additionally, general trash also ends up on the EOD Range through the actions of these natural phenomena. These items are typically either washed ashore from the ocean, or brought to the surface from beneath the beach due to wave action, heavy rains, and/or winds. The purpose of non-routine EOD Range policing activities is to ensure that these materials, which end up on the EOD range through natural phenomena, are removed in a timely fashion in order to minimize any risk from exposure.

7.2 Non-routine Site Inspections

Non-routine site inspections are conducted following the occurrence of significant atmospheric, oceanic, or geological phenomena at the facility. Examples of such phenomena include typhoons, flooding tsunamis, landslide, etc. EOD personnel will schedule a non-routine inspection as soon as practical following such significant events. Once commenced, the non-routine inspection is carried out using the same procedures as outlined for routine site inspections (See Section 6.2).

7.3 Identification

Identification is performed in a manner consistent with the method outlined in Section 6.4.

7.4 Disposition of Waste

Disposition of waste collected is accomplished in a manner consistent with the method outlined in Section 6.5.

Appendix K

36 Wing Instruction (WI) 32-3001

36 WGI 32-3001

BY ORDER OF THE COMMANDER, 36TH WING (PACAF)

36 WING INSTRUCTION 32-3001

1 May 2008

Civil Engineering

EXPLOSIVE ORDNANCE DISPOSAL (EOD) DEMOLITION RANGE PROCEDURES

OPR: 36 CES/CED (MSgt Thomas A. Allen)

Certified by: 36 MSG/CC (Col Mark S. Talley)

Pages: 18/Distribution: F

This instruction implements AFPD 32-30, Explosive Ordnance Disposal, and supplements procedures contained in 36 Wing Instruction 13-202, Airfield Operations. It establishes procedures for the safe operation of the EOD Demolition Range. This instruction applies to all military, civilian, and local law enforcement organizations and members; assigned, TDY, or deployed to Andersen AFB (including AFRC or ANG units or members). This publication may not be supplemented by lower organizational elements.

SUMMARY OF REVISIONS

This is a revision of the previous edition and new procedures were incorporated to meet current Explosive Site Plan, PACAF-Andersen 06-S060 with Compensatory Measures. Fragmentation producing munitions items greater than 5 inches in diameter will be buried a minimum of 4 feet. This revision also deleted requirement for 2 week prior routing of explosive site plan for fragmentation producing detonations, the intent of this routing is already met by approval of this Instruction. Two week notification of operations will still be distributed via 36 CES/CC.

1. References:

- 1.1. Explosive Site Plan Requests, Explosives Ordnance Disposal (EOD) Fragmenting Demolition Range, EOD Demolition Control Site, and Aboveground Magazine, Andersen AFB, Guam (PACAF-Andersen 06-S060, 07-S004 and 07-S005), 27 Sep 2007
- 1.2. Explosive Site Plan, (PACAF-Andersen 06-S060, 07-S04 and 07-S05) EOD Disposal Range, 27 Sep 2007
- 1.3. AFI 32-3001, Explosive Ordnance Disposal Program, 10 Oct 2007
- 1.4. Technical Order 60A-1-1-4, Protection of Personnel and Property, 17 Dec 2003
- 1.5. Technical Order 60A-1-1-31, General Info on EOD Disposal Procedures, 6 Dec 2005
- 1.6. AFMAN 91-201, Explosive Safety Standards, 18 Oct 2001
- 1.7. 36 WGI 13-202, Airfield Operations, 10 Apr 2006
- 1.8. Air Force Policy Directive 32-30, Explosive Ordnance Disposal, 8 May 2006

2. General Information:

2.1. The EOD Demolition Range is intended for use by the EOD Flight for the demolition of hazardous/unserviceable munitions (emergency and routine), explosives, and for maintaining proficiency in general demolition procedures and the operation of explosive actuated EOD tool sets. Other agencies requiring range use must coordinate their request through the 36th Civil Engineer EOD Flight, 36th Civil Engineer Environmental Flight, and 36th Wing Safety Office prior to use. Furthermore, agencies requesting range use will provide all equipment and materials required for the operation and will be escorted by a 7-skill level NCO assigned to the 36 CES EOD Flight.

2.2. The EOD Demolition Range is located on the northern coastline 8,000 feet west of Pati Point and 4,600 feet north of runway 06L/24R. The LAT and LONG coordinates for the range demolition site are 13 deg 35.977 North and 144 deg 55.643 East. The range is also within the CATM small arms firing range "footprint". Operations will not be conducted simultaneously at each site. Coordination with Combat Arms Training and Maintenance (CATM) personnel is imperative prior to planning any operation. For long range planning purposes, Fridays are used for pre-scheduled and routine detonations since the CATM range is generally active Monday through Thursday.

2.3. The Mk-84 (2,000 pound) bomb was selected as the worst case fragment producing item; consequently, all items detonated on the range must have a fragmentation range less than that of an Mk-84 bomb.

2.4. The disposal area will be policed after every use. The reef and jungle area will be policed quarterly from the reef line to 100 feet east of the detonation area (see attachment 5).

3. Personnel Limits:

3.1. The maximum number of personnel on range will be commensurate with a safe and efficient operation, but will not be less than two qualified personnel.

3.2. Only one supervisor and one worker will be present during priming operations.

4. Explosive Limits:

4.1. The range explosive limit is **600 pounds** NEW Hazard Class/Division 1.1 for any single detonation. This includes all demolition materials.

4.2. The range explosive limit for open burn is **100 pounds** NEW for any single operation. This includes all demolition materials.

5. Safety:

5.1. The range will not be used without permission of the 36 CES EOD Flight Chief/NCOIC.

5.2. The EOD Range Book will be on-site during all operations and will contain as a minimum:

5.2.1. A copy of this instruction.

5.2.2. Technical Order 11A-1-42, General Instructions for Disposal of Conventional Munitions.

5.2.3. Technical Order 11A-1-66, General Instructions, Demolitions.

5.2.4. Flight Operating Instruction 32-3003, Transportation of Explosives.

5.2.5. 11A-20-17-1, MX-22 Remote Firing Device.

5.3. The CATM and EOD range flags will be raised before conducting all explosive operations.

5.4. The Range Safety Officer (RSO), minimum 3E871, will maintain positive control over all firing devices.

5.5. Demolition explosives and initiators will be secured when not in use.

5.6. For operations involving munitions greater than five inches in diameter, all personnel working in facilities within 4,000 feet will be evacuated.

5.7. A personnel protective bunker is located 1,250 feet west of the detonation point.

5.8. The minimum withdrawal distance for non-essential personnel is 1,250 feet. This distance was selected since all detonations are conducted at the base of a 520 foot cliff and that cliff line channels fragments out to the Philippine Sea.

5.9. During all instances of lost communications, demolition operations will cease and the Team Chief will send a runner to relay required information.

6. Misfire Procedures:

6.1. A **1-hour** wait time will be observed for all non-electric misfires. One EOD technician will clear the misfire with another EOD technician serving as a safety observer.

6.2. A **30-minute** wait time will be observed for all electric misfires. One EOD technician will clear the misfire with another EOD technician serving as a safety observer.

6.3. Immediately notify the Andersen Tower and Airfield Management Operations (AMOPS) of any misfire that involves the restriction of airspace and the associated wait time.

7. Non-Fragmentation Producing Operations

***Applies to all planned detonations in excess of 300 pounds NEW.**

7.1. The EOD Flight Chief/NCOIC will designate a Team Chief for each operation. The senior EOD member present (minimum 3E871) will serve as the RSO. The Team Chief and RSO may be the same individual if necessary due to manning constraints.

*7.2. **2-weeks** prior to the planned operation, the operation dates/times will be forwarded to Public Affairs for base newspaper and TV bulletin release. A template for the TV bulletin is located at Q:\data_ced\4. Operations\Range\TV and Newspaper Template.ppt.

*7.3. **2-weeks** prior to the planned operation, an e-mail will be sent to the following distribution lists via the 36 CES/CC:

7.3.1. 36 WG/CC

7.3.2. 36 WG/GROUP CC's

7.3.3. 36 WG/Squadron CCs

7.3.4. Andersen Chief's Group

Sample statement is below:

“The 36 CES Explosive Ordnance Disposal Flight will be destroying munitions at the EOD range from (time window) on (Day), (Date). As a safety precaution, Pati Beach, the CATM range, Tarague overlook, and some facilities on the North Ramp will be closed during this time. Please contact the 36 CES Explosive Ordnance Disposal flight at 366-5198 for more information.”

7.4. The Team Chief will ensure proper Above Ground Level (AGL) safe distance is calculated utilizing technical order 60A-1-1-4 and AFMAN 91-201. The AGL will be included on the range notification worksheet and can be found at Q:\data_ced\4.Operations\Range\Range Fax Sheets.

7.4.1. **72-hours** prior to a scheduled operation, a completed range notification worksheet will be faxed or emailed to the Andersen Tower, Air Field Management Operations, Guam Combined Control Facility (CCF), and the U.S. Coast Guard. U.S. Coast Guard will in turn issue a “General Warning” to watercraft in the Tarague Basin.

7.5. If manning permits, one person will remain at the EOD Control Center to facilitate coordination as needed. If manning is not available, the operation Team Chief will perform these duties from the range.

7.6. The operation Team Chief will:

7.6.1. Ensure all required notifications are recorded using attachment 1A.

7.6.2. Conduct a safety briefing for all personnel prior to handling any explosives using attachment 4.

7.6.3. Ensure all required tools/equipment, vehicles and technical data are on-hand and functional prior to conducting explosive operations.

7.6.4. Maintain radio contact with either the EOD Control Center or Crash Control throughout the operation.

7.6.5. Perform a 360 degree visual scan of the area prior to any detonation. If water traffic is spotted within the required clear zone; attempt contact using the maritime radio set to channel 16. If contact cannot be made, suspend operations until the water traffic departs to a safe distance.

7.6.6. Designate a location all non-essential personnel will relocate to for the detonation (i.e. EOD Range bunker, EOD Range gate, CATM Range gate, Pati Beach, etc.). Per AFMAN 91-201, the minimum withdrawal distance for all non-essential personnel is 1,250 feet.

7.6.7. Contact Andersen Tower and AMOPS 30 minutes prior to expected detonation.

7.6.8. Contact Andersen Tower and AMOPS 5 minutes prior to detonation.

7.6.9. Notify Andersen Tower and AMOPS after each detonation is complete and again when all detonations are complete for the day.

8. Fragmentation Producing Operations Involving Ordnance Five Inches in Diameter and Less

8.1. The EOD Flight Chief/NCOIC will designate a Team Chief for each operation. The senior EOD member present (minimum 3E871) will serve as the RSO. The Team Chief and RSO may be the same individual if necessary due to manning constraints.

8.2. The Team Chief will ensure proper Above Ground Level (AGL) safe distance is calculated utilizing technical order 60A-1-1-4 and AFMAN 91-201. The AGL will be included on the range notification worksheet and can be found at Q:\data_ced\4.Operations\Range\Range Fax Sheets.

8.2.1. **72-hours** prior to a scheduled operation, a completed range notification worksheet will be faxed or emailed to the Andersen Tower, Air Field Management Operations, Guam Combined Control Facility (CCF), and the U.S. Coast Guard. U.S. Coast Guard will in turn issue a “General Warning” to watercraft in the Tarague Basin.

8.3. For operations with calculated fragmentation distances between 1,850 and 2,000 feet, EOD Team Chief will ensure the Tarague Overlook is clear of personnel. One EOD team member will be posted where 32nd street makes a sharp bend to the south by the MSA 2 fence.

8.4. **Emergency disposal** operations will be coordinated through the 36 MSG/CC in the most expeditious manner possible (e.g. phone, Land Mobile Radio(LMR), email) before initiation of the detonation, if possible.

8.5. If manning permits, one person will remain at the EOD Control Center to facilitate coordination. If manning is not available, the operation Team Chief will perform these duties from the range.

8.6. The operation Team Chief will:

8.6.1. Ensure all required notifications are recorded using attachment 1A.

8.6.2. Conduct a safety briefing for all personnel prior to handling any explosives using attachment 4.

8.6.3. Ensure all required tools/equipment, vehicles, and technical data are on-hand and in good working condition prior to conducting explosive operations.

8.6.4. Maintain radio contact with either the EOD Control Center or Crash Control throughout the operation.

8.6.5. Perform a 360 degree visual scan of the area prior to any detonation. If water traffic is spotted within the required clear zone; attempt contact using the maritime radio set to channel 16. If contact cannot be made, suspend operations until the water traffic departs to a safe distance.

8.6.6. Designate a location all non-essential personnel will relocate to for the detonation (i.e. EOD Range bunker, EOD Range gate, CATM Range gate, Pati Beach, etc.). Per AFMAN 91-201, the minimum withdrawal distance for non-essential personnel is 1,250 feet.

8.6.7. Contact Andersen Tower and AMOPS 30 minutes prior to expected detonation.

8.6.8. Contact Andersen Tower and AMOPS five minutes prior to detonation.

8.6.9. Notify Andersen Tower and AMOPS after each detonation is complete and again when all detonations are complete for the day.

9. Fragmentation Producing Operations Involving Ordnance Greater Than Five Inches in Diameter

9.1. The EOD Flight Chief/NCOIC will designate a Team Chief for each operation. The senior EOD member present, minimum 3E871, will serve as the RSO. The Team Chief and RSO can be the same individual if necessary due to manning constraints.

9.2. **2-weeks** prior to the planned operation, the operation dates/times will be forwarded to Public Affairs for base newspaper and TV bulletin release. A template for the TV bulletin is located at Q:\data_ced\4. Operations\Range\TV and Newspaper Template.ppt.

9.3. **2-weeks** prior to the planned operation, an e-mail will be sent to the following distribution lists via the 36 CES/CC:

9.3.1. 36 WG/CC

9.3.2. 36 WG/GROUP CC's

9.3.3. 36 WG/Squadron CCs

9.3.4. Andersen Chief's Group

Sample statement is below:

“The 36 CES Explosive Ordnance Disposal Flight will be destroying munitions at the EOD range from (time window) on (Day), (Date). As a safety precaution, Pati Beach, the CATM range, Tarague overlook, and some facilities on the North Ramp will be closed during this time. Please contact the 36 CES Explosive Ordnance Disposal flight at 366-5198 for more information.”

9.4. Due to mission requirements, if any Commander cannot support on the requested day/time, notify the 36 CES/CC as soon as possible.

9.5. The Team Chief will ensure the proper Above Ground Level (AGL) safe distance is calculated utilizing technical order 60A-1-1-4 and AFMAN 91-201. The AGL will be included on the range notification worksheet and can be found at Q:\data_ced\4.Operations\Range\Range Fax Sheets.

9.5.1. **72-hours** prior to a scheduled operation, a completed range notification worksheet will be faxed or emailed to the Andersen Tower, Air Field Management Operations, Guam Combined Control Facility (CCF), and the U.S. Coast Guard. The Coast Guard will in turn issue a "General Warning" to watercraft in the Tarague Basin.

9.5.2. **72-hours** prior to a scheduled operation, EOD operations section will notify the 36 CES Environmental flight, Security Forces Military Working Dog section, and U.S. Department of Agriculture(USDA) kennels.

9.6. **Emergency disposal** operations will be coordinated through the 36 WG/CC in the most expeditious manner possible, e.g. phone, LMR, e-mail, before initiation of the detonation, if possible.

10. Day of the Planned Operation Involving Ordnance Greater than Five inches in Diameter

10.1. All Organizations within the 4,000 foot clear zone will:

10.1.1. Be notified to evacuate their facilities for the duration of the operation.

10.1.2. Be requested to report evacuation completion to EOD Operations.

10.2. 36 CES/EOD will:

10.2.1. Notify SFS cordon patrols when evacuation is complete.

10.2.2. Contact the Law Enforcement (LE) desk if direct contact cannot be made with cordon patrols.

10.3. 36 OSS will:

10.3.1. Evacuate parking spots N33, N34, N36, N38, N40, N42, and portions of Taxiway D in front of the evacuated parking spots.

10.4. 36 MUNS will:

10.4.1. Evacuate all personnel working in MSA 2 including buildings 51104, 51109, and 51150.

10.5. 36 SFS will:

10.5.1. Evacuate all personnel from the CATM firing range complex.

10.5.2. Evacuate all personnel from buildings 2797 and 2798, the Military Working Dog kennels.

10.5.3. Post patrols at the following locations to maintain the safety cordon:

10.5.3.1. Perimeter road adjacent to building 2649.

10.5.3.2. Perimeter road on the flight line side of MSA 2 (see attachment 6.)

10.6. 36 CS will:

10.6.1. Evacuate all personnel from building 2750, Defense Meteorological Satellite Program (DMSP).

10.6.2. Evacuate personnel working at building 2616, the switch facility.

10.7. HSC-25 will:

10.7.1. Evacuate all personnel from building 2600.

10.7.2. Evacuate all personnel working in the POL tank farm area.

10.8. 36 CES will:

10.8.1. Evacuate all personnel from building 2799, Entomology.

10.8.2. Direct the construction management office to account for and evacuate all contractors working inside the 4,000 foot arc.

10.8.3. Ensure that a 10K, AT front-end loader is available for range support.

10.9. The EOD Team Chief will:

10.9.1. Ensure all required notifications are recorded using attachment 1B.

10.9.2. Verify evacuation is complete using attachment 1B.

10.9.3. Conduct a safety briefing for all personnel prior to handling any explosives using attachment 4.

10.9.4. Ensure all required tools/equipment, vehicles, and technical data are on-hand and functional prior to conducting explosive operations.

10.9.5. Maintain radio contact with EOD Operations, Crash Control, and SFS throughout the operation.

10.9.6. Perform a 360 degree visual scan of the area prior to any detonation. If water traffic is spotted within the required clear zone; attempt contact using the maritime radio set to channel 16. If contact cannot be made, suspend operations until the water traffic departs to a safe distance.

10.9.7. Designate a location all non-essential personnel will relocate to for the detonation (i.e. EOD Range gate, CATM Range gate, Pati Beach, etc.). Per AFMAN 91-201, the minimum withdrawal distance for non-essential personnel is 4,000 feet.

10.9.8. Position bombs/projectiles as close to the cliff line as possible. Refer to attachment 5.

10.9.9. Ensure general purpose bombs (i.e. M117, Mk 80-series, BLU-109, etc.) are placed perpendicular to and within three feet of the cliff line. Position base plate directly towards the Philippine Sea and nose directly into the cliff line. Remove lugs when possible, and angle strong backs towards the ground. Munitions items will be buried a minimum of 4 feet.

10.9.10. Contact Andersen Tower and AMOPS 30 minutes prior to expected detonation.

10.9.11. Contact Andersen Tower and AMOPS five minutes prior to detonation.

10.9.12. Notify Andersen Tower and AMOPS after each detonation is complete and again when all detonations are complete for the day.

10.9.13. After each detonation, EOD personnel will inspect/clear the detonation area of explosive residue and inspect the integrity of the cliff face. When the area is cleared, the next bomb will be placed. If the cliff face is deemed unsafe, remaining operations will be delayed until the problem is resolved or cancelled.

11. Emergency Procedures:

11.1. Cease operations and secure area/items involved in an accident/incident.

11.2. Render first aid, as required.

11.3. Request emergency assistance via the EOD Control Center or Andersen Crash Control, if required.

11.4. Notify the operation Team Chief/RSO, Flight Chief or NCOIC immediately. Notify the 36 CES/CC and Wing Safety as soon as possible.

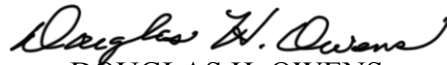
11.5. Take all actions necessary to secure the area for emergency responders.

12. Supplemental Range Information:

12.1. The EOD Demolition Range is a culturally and ecologically sensitive area. Limit vehicle operations to the road and disposal area, as much as practical.

12.2. The beach is a protected habitat. Green Sea Turtle nesting on Guam may occur from 1 April through 15 August each year. During that time, vehicle traffic in the disposal area should be minimized.

12.3. The range is also home to two protected species of bats and crows. The 36 CES Environmental flight must be notified before and after operations to ensure these species were not affected.



DOUGLAS H. OWENS
Brigadier General, USAF
Commander

Attachments:

1. Range Notification Lists
 - a. Non-Fragmenting Operations/5 Inch Diameter or Less
 - b. Fragmenting Munitions Greater than 5 Inch Diameter
2. Range Operation Checklist
3. Post Range Operations Checklist
4. Safety Briefing
5. Proper Detonation Point/Cliff Orientation and Quarterly Clean-up Area
6. Security Forces Cordon Locations

Attachment 1A
Range Notification List
Non-Fragmenting Operations/5 Inch Diameter or Less

AGENCY	INITIALS/DATE
Law Enforcement Desk: 366-2910	
Fire Department: 366-5284	
Ambulance Service: 366-3231	
Coast Guard: 355-4910/4905 Email: rccguam@uscg.mil Fax: 355-4831	
36 WG Safety: 366-4222/7233 Fax: 366-3326	
Command Post: 366-2981	
36 WG Tower: 366-4737/4281 Fax: 366-3333	
Airfield Management Operations: 366-4188/1010 Email: 36 OSS-OSAM Fax: 366-6217/3151/8218	
Guam CCF: 473-1210 or 366-5151/5124 Fax: 366-3189	
Munitions Control: 366-6393	
CATM: 366-2254/3220	
CES Environmental: 366-2101/2556	
Seismology: 355-5259 (If over 300 lbs. NEW)	
Public Affairs: 366-4202 (If over 300 lbs. NEW refer to para. 7.2 & 9.2)	
Weather: 366-5230	

CHECKLIST COMPLETED BY:

PRINT/SIGN/DATE: _____

Attachment 1B
Range Notification List
Fragmenting Munitions Greater Than 5 Inches in Diameter
*** Agencies have evacuation requirements to complete**

AGENCY	NAME/RANK/DATE
Law Enforcement Desk: 366-2910 Set up Cordon – See Attachment 6	
Fire Department: 366-5284	
Ambulance Service: 366-3231	
Coast Guard: 355-4910/4905 Fax: 355-4831 Email: rccguam@uscg.mil	
Wing Safety: 366-4222/7233 Fax: 366-3326	
Seismology: 355-5259 (If over 300 lbs. NEW)	
Public Affairs: 366-4202 (If over 300 lbs. NEW refer to para. 7.2 & 9.2)	
Command Post: 366-2981	
36 WG Tower: 366-4737/4281 Fax: 366-3333	
Guam CCF: 473-1210 or 366-5151/5124 Fax: 366-3189	
CES Environmental: 366-2101/2556	
Weather: 366-5230	
* Airfield Management Operations: 366-4188/1010 Fax: 366-6217/3151/8218 Email: 36 OSS-OSAM Have Airfield Management Operations notify personnel to remove aircraft from Parking Spots N33, N34, N36, N38, N40, N42, and Taxiway D.	
*Munitions Control: 366-6393 Notify MSA personnel to include buildings 51104, 51109, 51150, and MSA 2.	
*CATM: 366-2254/3220	
*Military Working Dog Section/USDA Kennels: 366-3822/4279 If no answer, have LE Desk contact MWD personnel. Bldg 2797, 2798	
*Entomology: 366-3273	
*DMSP (Comm): 366-5700 Bldg 2616 Switch Facility, and Bldg 2750	
*CE Construction Management: 366-3844 Evacuate all contractors working in the clear zone	
*Resource Control Center: 366-6291/6423/6422 Evacuate all personnel working in the HSC-25 POL tank farm area and building 2600 storage.	

CHECKLIST COMPLETED BY: PRINT/SIGN/DATE: _____

Attachment 2

Range Operation Checklist

- _____ Provide a safety briefing prior to the operation
- _____ Ensure emergency permit is received for non-permitted items (see EPA permit), if required
- _____ Ensure ADR items are inventoried and only authorized munitions are being treated
- _____ Notify all agencies before beginning explosive operations
- _____ Clear area of combustible material within 200 feet of the detonation site
- _____ Secure all entrances to the range prior to detonations
- _____ Post range warning signs
- _____ Ensure the red range flag is flown at the CATM gate and on EOD range until completion of the operation
- _____ Comply with all requirements for safe transportation of explosives
- _____ Ensure first aid equipment is immediately available on the range
- _____ Function check/make available satellite phone, marine radio (channel 16), and Motorola radios for use on the range
- _____ Confirm there are no electrical storms within 5 nautical miles or winds in excess of 15 mph prior to beginning operations
- _____ Ensure blasting caps, bulk explosives, and munitions are properly segregated
- _____ Inspect tools/equipment, vehicles, and the range prior to and immediately following any operation
- _____ Ensure fire extinguishers are available
- _____ Ensure range is clear of unauthorized personnel to include beach, cliff line, and water
- _____ Check beach to determine if hazardous materials have washed ashore in the immediately area
- _____ Ensure all personnel, except for the initiation team, are withdrawn from the detonation site prior to connecting initiators to explosives
- _____ Obtain clearance from tower immediately prior to initiating any explosives
- _____ Ensure all personnel take appropriate cover prior to initiating fragment producing detonations

Attachment 3
Post Range Operations Checklist

- _____ Perform a detailed inspection of the range after all detonations are complete for the day and ensure no residue remains
- _____ Ensure all munitions/explosive residue is visually inspected for contamination/reactivity
- _____ Retreat reactive residue (under no circumstances will reactive residue be removed from the range)
- _____ Collect non-reactive open detonation fragments and place in the landfill's metal pile
- _____ Collect spent cartridges and turn into the Munitions Inspections section

Attachment 4 Safety Briefing

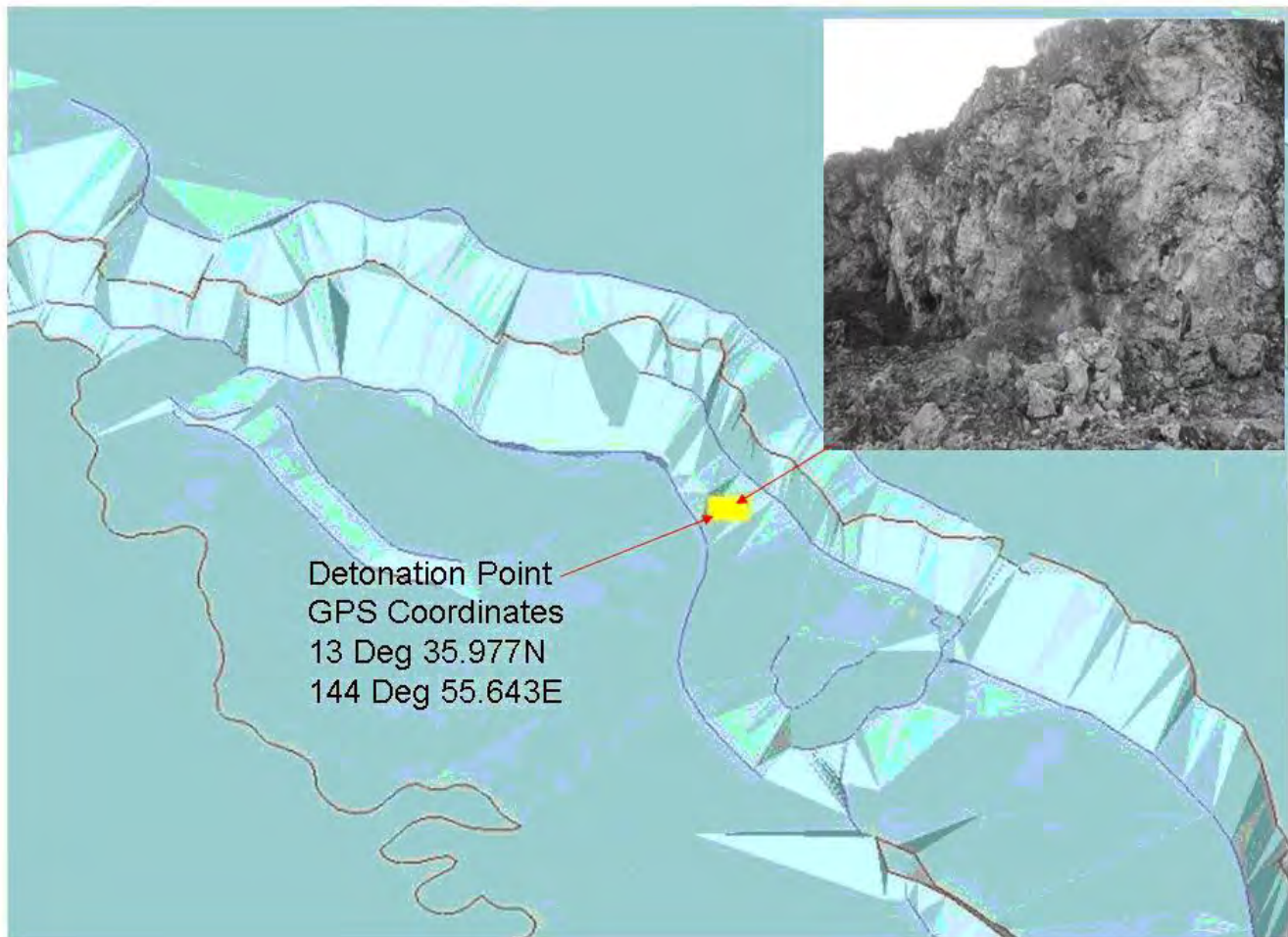
1. Brief all that apply:

- _____ Location of Explosive and initiators
- _____ Location of serviceable First Aid Kit
- _____ Location of serviceable Fire Extinguishers
- _____ Emergency evacuation route/assembly point
- _____ Accomplished/record head-count _____
- _____ Remove all rings, watches, jewelry, etc.
- _____ Brief the Smoking Policy/Designated Area
- _____ Brief Personnel and Explosive limits
- _____ Review Satellite phone and radio locations and procedures
- _____ Assign Misfire Team _____ / _____
- _____ DO NOT operate M122/XM22 within 100 feet of Electro-Explosive Devices
- _____ Beware of falling rocks from cliff line
- _____ Remind all personnel to consume water
- _____ Use sunscreen and stay in the shade when possible
- _____ Brief vehicle locations during work, detonations, and burning operations
- _____ Identify Initiation Team _____ / _____
- _____ Remind Initiation Team Vehicle will be running prior to priming of explosive charges

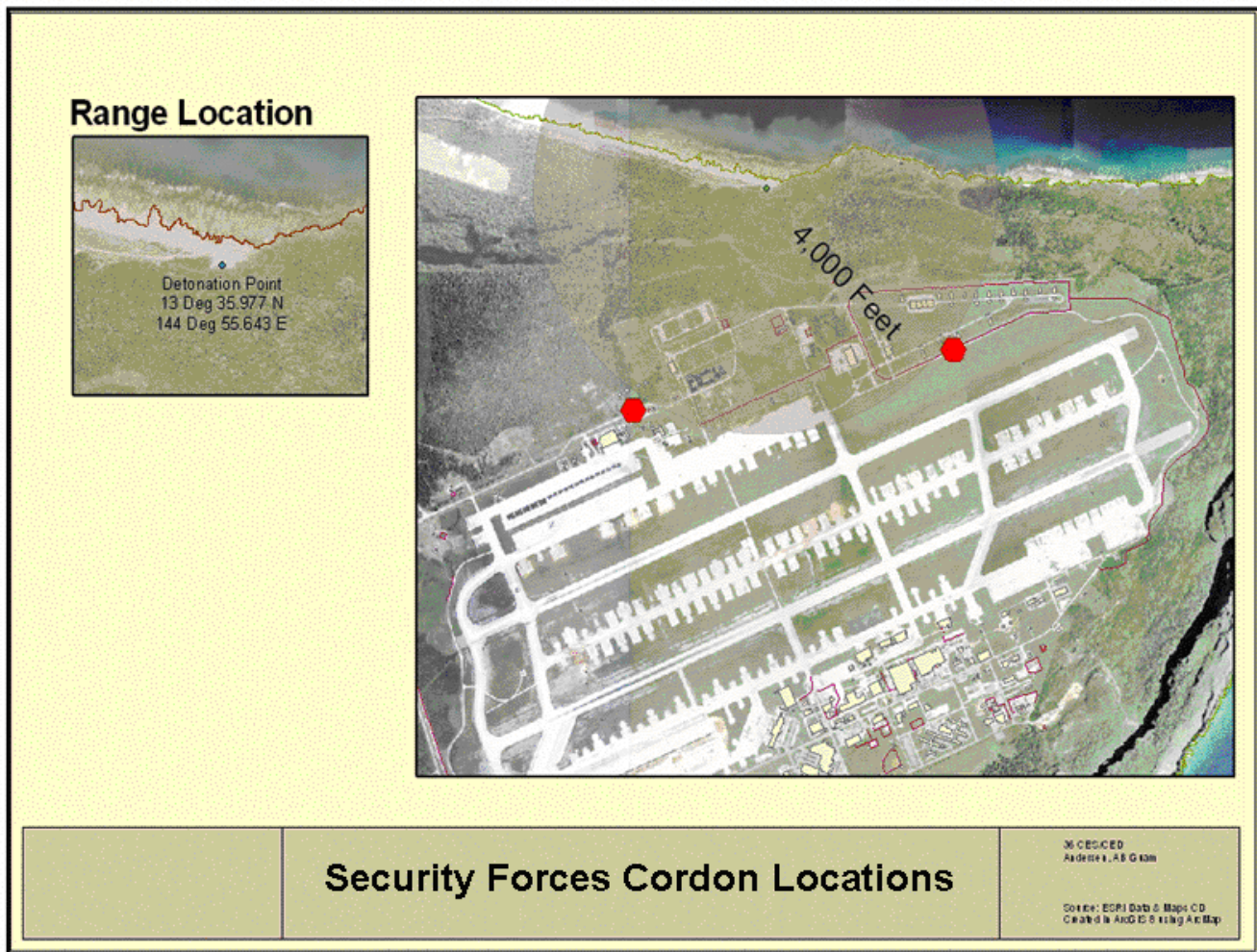
2. Emergency Procedures:

- _____ Render First Aid
- _____ Summon help (give location, nature of emergency, injury status, nature of assistance required)
- _____ Open CATM and EOD gates for emergency responders
- _____ Notify EOD Control Center/Andersen Crash Control as applicable
- _____ RSO/Team Chief will direct emergency responders as necessary
- _____ DO NOT fight fires involving explosives
- _____ Wait 1-hour for NON-ELECTRIC misfires and 30 minutes for ELECTRIC Misfires
- _____ Personnel will either evacuate to the EOD protective shelter or the CATM range building for a head count, Team Chief or RSO will make determination

Attachment 5
Proper Detonation Point/Cliff Orientation and Quarterly Clean-up Area



Attachment 6
SFS Cordon and Warning Sign Locations



Appendix L

Biological Mitigation Plan

APPENDIX L - BIOLOGICAL MITIGATION PLAN

BIOLOGICAL MITIGATION PLAN FOR OPEN BURN-OPEN DETONATION OPERATIONS ANDERSEN AFB

Mariana Crow

Few crows remain on Guam. All existing Guam crows presently occur on Andersen Air Force Base (AAFB). The Air Force entered into a formal management agreement with Guam Division of Aquatic and Wildlife Resources (GDAWR) in 1964 to cooperate in enhancing, protecting and conserving wildlife resources on AAFB. GDAWR biologists are consulted in all biological resources management decisions, conduct routine monitoring of wildlife, and implement recovery programs for endangered and threatened species. A cooperative agreement between the Air Force and US Fish and Wildlife Service (USFWS) established the Guam National Wildlife Refuge (GNWR) in March 1994.

Although Mariana Crows likely breed year round, there is a preference for the October to mid-April period. GDAWR constantly monitors the crow population at AAFB for nesting activity. Once a nest is established the nest tree is snake-proofed by GDAWR to minimize snake predation. Part of the ongoing recovery effort is to control the introduced Brown Tree Snake (BTS) population at the Munitions Storage Area (MSA) by trapping. Crow hack sites are located at the MSA and are removed from the Open Burn/Open Detonation Unit (OB/OD) area. Most crow nesting activity occurs in the MSA area where the Air Force provides BTS population control. If crow nesting activity is observed in the OB/OD affected area it should be monitored during a detonation event to determine possible effects. If monitoring shows negative effects to nesting or other reproductive behavior from OB/OD activity, the Air Force will schedule and manage detonations outside of those times when the Mariana Crow displays nesting or other reproductive behavior in the area.

Mariana Fruit Bat

In 1973, the Air Force set aside 281 hectares of cliff line habitat, designated as the Pati Point Natural Area immediately north of the Andersen AFB OB/OD area for nature conservation. A recent review of Real Estate documents suggests the Pati Point Area may be GovGuam property. The Pati Point Natural Reserve is home to the only remaining fruit bat colony on Guam larger than a few individuals. The Pati Point Natural Area is off limits to human intrusion except for colony monitoring. AAFB Conservation Officers perform monthly scans of the bat colony area from the cliff line for evidence of trespass. The situation is also monitored by GDAWR. GDAWR will be consulted at each three-year permit renewal to review possible changes to the situation. Any significant changes in the level of OB/OD activity that occur during interim periods will be submitted to the USEPA and GDAWR for review before implementation. If the main colony relocates the roost closer to the OB/OD range (which could occur at any time since the colony is known to move around) the potential for disturbance will be

APPENDIX L - BIOLOGICAL MITIGATION PLAN

reevaluated. The base remains in close contact with GDAWR and will evaluate any change in roosting sites that might occur.

Nighttime use of the range would be of concern since the range lies within the colony's foraging area and along the foraging route of the bats when flying to western feeding sites. However, OB/OD activities are prohibited at night so this is not an issue.

Green Sea Turtles

The beach adjacent to the OB/OD area is nesting habitat for the endangered Green Sea Turtle. Beach areas and adjacent waters are scanned for turtle activity prior to conducting OB/OD activities. When green sea turtles are present on the beach or in adjacent waters operations will be tailored to limit the ground shock imparted at the nearest nest. Driving on beaches used by turtles for egg-laying can crush incubating eggs, crush hatchlings in the nest, and trap hatchlings after they emerge from the nest cavity. Vehicles are prohibited from the EOD and OB/OD beach.